

REMARKS

Claims 1-6 and 16-25 are currently pending. Applicants respectfully request reconsideration of the present application.

Claim Rejections – 35 U.S.C. §102

Claims 1-2, 16-19, and 22-23 have been rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Nakatani (US 6,008,576). This rejection is respectfully traversed.

In rejecting claim 1, the Office has stated that "Figure 3 of Nakatani shows a field emission device comprising a substrate (6)...a gate insulating layer (5b) formed above the substrate and having a well exposing a portion of the cathode... and a gate electrode 2(a) formed on the gate insulating layer and having a gate hole corresponding to the well, wherein the gate electrode further included a cylindrical electrode part that is capable of forming a focusing electric field from the gate hole toward a proceeding path of an electron beam." Applicants respectfully disagree.

The Nakatani patent discloses, as depicted in FIG. 3 thereof, a flat display that includes an insulating film 5. The insulating film 5 includes a lower insulating film 5a and an upper insulating film 5b, wherein the lower insulating film 5a has a recess with respect to the upper insulating film 5b (col. 11, l. 40-50). Thus, the cylindrical gate opening formed by the lower and upper insulating films has one end closer to the substrate that has a larger radius and the other end further from the substrate that has a smaller radius. This configuration reduces the gap between the gate electrode film 2a formed on the upper insulating film 5b and the emitter tip 1.

The gate opening, however, is simply circular. See col. 11, l. 46-50.

The gate itself is simply a flat layer. The gate electrode 2a formed of ITO is illustrated as being flat in Figs. 3, 5, 7, 8, 10 12(f)-12(i), 13(d)-13(j), 14(a)-14(b) and prior art figures 15(d)-15(h). At no point does the gate electrode include "a cylindrical electrode part that forms a focusing electric field from the gate hole toward a proceeding path of an electron beam."

The Office may be initially interpreting the bumps in the gate electrode caused by the emitter electrode metal film 3b as the recited "cylindrical electrode part" of the claims. This cannot be the case insofar as, if this portion of the electrode layer had a focusing effect, it would cause unbalanced focusing since these bumps are quite a bit more distant from some of the emitters than others. The central emitters of Fig. 5 would certainly not be affected, and therefore it must be assumed that the ones closer to these bumps should not be affected if proper electron emission is to be expected.

Stated differently, these minor variations in the gate electrode layer do not create a focusing effect, and should not be considered part of the gate electrode (as opposed to being part of the gate electrode layer). Also, the bumps would not meet the recitation of forming "a focusing electric field from the gate hole toward a preceding path of an electron beam". The Nakatani et al. patent is similar in this regard to the Toyota patent publication applied in the last Office Action. The current rejection should likewise be withdrawn for at least similar reasons.

As the cited reference fails to teach the recitation, Applicants respectfully submit that claim 1 is not anticipated by the cited reference, and claim 1 is patentable. Claims 2, 16 and 17 depend from claim 1, rendering them also patentable for at least the same reasons. While additional distinctions found in the

dependent claims will not be belabored, it is noted in passing that the undersigned could not locate a bellmouse shaped gate electrode in Nakatani et al., for example.

Based on at least the same reasons set for the above to address the rejection of claim 1, Applicants respectfully submit that independent claim 18 is patentable. Claims 19, 22, and 23 depend from claim 18, rendering them also patentable for at least the same reasons.

Claim Rejections – 35 U.S.C. §103(a)

Claims 3-4 and 20-21 have been rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Nakatani (US 6,008,576) in view of Hsu (US 6,448,701).

The Hsu patent does not cure, nor is it purported to cure, the deficiencies of the rejection noted above. Accordingly, Applicants respectfully submit that the rejection of claims 3-4 and 20-21 are patentable for at least the same reasons.

Claims 5-6 and 24-25 have been rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Nakatani (US 6,008,576) in view of Cade (US 5,942,849).

Again, this rejection is predicated in a contested characterization of the Nakatani patent, and is respectfully traversed, as pointed out above. Accordingly, Applicants respectfully submit that the rejection of claims 5-6 and 24-25 should be withdrawn.

Conclusion

Based on the reasons as set forth above, Applicants respectfully request allowance of all pending claims.

In the event that there are any questions concerning this paper, or the application in general, the Examiner is respectfully urged to telephone Applicants' undersigned representative so that prosecution of the application may be expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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By:



Charles F. Wieland III
Registration No. 33,096

P.O. Box 1404
Alexandria, VA 22313-1404
703.836.6620